

**ORTHORRHYNCHIUM ELEGANS (Hook. f. et Wils.) Reichdt.
(PHYLLOGONIACEAE), NEW RECORD FOR THE PHILLIPINE MOSS FLORA**

by

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ABSTRACT

Orthorrhynchium elegans is reported for the first time from the Philippine archipelago. Some noteworthy morphological features are also reported.

A recent study of many undetermined moss collections made by Prof. J. V. Pancho of the University of the Philippines from 1960–70 and deposited at the University herbarium (CAHP) yielded many new records for the local flora. Among which *Orthorrhynchium elegans* (Hook. f. et Wils.) Reichdt., previously known only from Australia and New Zealand, is of phytogeographical significance, and is, therefore, reported here separately together with some new morphological information.

The collection (Pancho 3915B, July 23, 1965) came from the vicinity of Mt. Apo on Mindanao Island, the second largest island of the country which is situated north of Borneo. The packet contains abundant sterile plants that show the characteristic complanate and distichous arrangement of the conduplicate leaves as described by Sainsbury (1955) and Wijk (1957) (Figs. 1 & 2). The leaf apices are blunt (Fig. 3). This feature can be used to distinguish the taxon from the morphologically similar *Horikawaea phyllogonioides* (Sull.) Nog. which has abruptly acute and slightly recurved leaf apices. The latter was listed in Bartram (1939) as *Orthorrhynchium phyllogonioides* (Sull.) E. G. Britton.

Wijk (1957) was the first one to point out the important difference between *O. phyllogonioides* and *O. elegans* in terms of their phyllotaxy. He reported, in addition, the identification confusion which existed among the many herbarium collections of the two taxa which he had examined and concluded that *O. phyllogonioides* be best included in the genus *Neckera* in the family Neckeraceae. Noguchi (1961), on the other hand, contended that the taxon be placed in *Horikawaea*, a new genus which he had proposed in 1937 for the family Phyllogoniaceae, after fully stressing the salient morphological differences between *O. phyllogonioides* and species of *Neckera*.

I have been fortunate to have had the opportunity to study the isotypes of *Neckera phyllogonioides* Sull. and *Orthorrhynchium philippinense* C. Muell., and also a Bartlett collection (15935a) named *O. phyllogonioides* by E. B. Bartram. All collections mentioned here are from the Philippines and are part of Bartram's Herbarium at the Farlow Herbarium. I fully agree with Bartram (1939) in uniting the taxa in question under the single species epithet, *O. phyllogonioides*. Nevertheless, this species, as suggested by Noguchi (1961), is best placed in *Horikawaea*. The justification has already been convincingly outlined by Noguchi (1961) and will not be repeated here.

A more recent collection (Alvarez 0-80553) of *O. elegans* at CAHP, which originated from the same general locality of Mt. Apo, contains some fertile specimens. Three mature capsules with pilose, mitriform calyptra were available for detailed examination. The

peristome teeth, lacking the endostome, are only rarely perforated along the median line. The dorsal (or outer) surface of the exostome clearly shows the diplolepidous nature (Fig. 13). The ventral (or inner) surface develops irregular longitudinal (vertical columns) and horizontal thickenings (trabeculae) (Fig. 12) resulting in the formation of a series of thin-walled areas which may look like perforations under the light microscope. The apices of the teeth are slender and of uniform thickness and are often broken. It will be interesting to reexamine the peristome of *O. elegans* under the scanning electron microscope in order to determine the cell patterns as seen in the light of the recent report of Edwards (1979) on haplolepidous peristomes.

This peculiar pattern of cell wall thickening of the primary peristomial layer (cf. Edwards, 1979) in *O. elegans* is not known from any Philippine Neckeraceous taxa. Instead, a similar condition can be observed in the peristome of a few species of *Oedicladium* Mitt., *Palisadula* Toyama, and other genera of the family Pterobryaceae (cf. Iwatsuki, 1979).

The stem of *O. elegans* has been observed to consist of more or less uniform cells without a differentiated strand (Fig. 6). Pseudoparaphyllia appear late in the development of buds. When present, both filamentous and foliose types are seen. Interestingly, the Philippine plants bear abundant filamentous gemmae on the stem and leaf apices, a feature not mentioned in Sainsbury (1955) for the New Zealand population. These asexual propagules are septate and strongly papillose (Figs. 15 & 16), resembling the rhizoids which are always larger in size.

Dwarf male plants (Fig. 9) are discovered for the first time in *O. elegans*. Plants consisting of profusely branched protonema with a few leaves were found growing inside the folds of the conduplicate leaves of the female plants. Like the perichaetial leaves, perigonal leaves are not conduplicate and their leaf margins are irregularly lacinate to serrulate in the upper half (Figs. 9 & 10).

The spores (Fig. 14) are papillose and are of two sizes: the larger ones ranging between $32.5\ \mu - 40\ \mu$ (with a few becoming elongate and bean-shaped), and the smaller ones less than $20\ \mu$ in diameter. Whether or not there is a correlation between the spore sizes (anisospory) and sexual dimorphism (cf. Ramsay, 1979) is not known at present.

The distribution of *O. elegans* was mapped by Noguchi (1961) to be confined to Australia and New Zealand. Its discovery in the Philippines is a significant extension of its range while its presence in New Guinea is highly possible. I have seen several collections of *Orthorrhynchium* from the Christmas Islands, Papua New Guinea, and elsewhere in the Malesian region deposited at the University of Michigan (MICH), Singapore Botanic Gardens (SING), and other herbaria. All of them are *Horikawaea phyllogonioides*.

O. elegans, together with *Dawsonia superba* Grev., are two noteworthy Austro-New Guinean elements in the local moss flora.

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Figures 1–16. *Orthorrhynchium elegans* (Alvarez 0–80553).

1. habit sketch,
2. frond or secondary branch (arrow pointing at perichaetial bud),
3. leaf apex,
4. laminal cells,
5. leaf base,
6. cross-section of stem,
- 7–8. leaves,
9. male plant,
10. perichaetium,
11. exothecial cells,
12. peristome tooth, ventral view,
13. peristome tooth, dorsal view,
14. spores,
- 15–16. gemmae.

